

TABLE 2.—Percentage of Normal Precipitation, 1940

Section	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Ala.....	89	131	89	83	88	149	156	65	45	51	107	128	102
Ariz.....	57	141	21	131	100	257	42	97	242	212	132	311	125
Ark.....	36	100	50	142	71	106	110	136	54	61	160	91	93
Calif.....	174	201	120	78	64	25	14	10	87	143	57	250	152
Colo.....	187	131	98	87	91	56	75	73	211	71	126	123	102
Fla.....	95	149	114	97	49	103	115	102	99	20	55	209	99
Ga.....	108	110	83	84	62	106	117	137	28	33	138	98	95
Idaho.....	118	214	136	159	33	60	123	17	335	157	100	88	127
Ill.....	64	75	66	120	78	71	47	120	18	78	105	91	77
Ind.....	54	107	50	159	102	81	44	81	34	82	117	83	83
Iowa.....	78	109	99	118	51	77	122	182	25	97	153	114	97
Kans.....	124	92	91	115	100	67	49	138	89	53	203	120	96
Ky.....	38	133	107	123	87	81	65	96	67	27	107	80	85
La.....	61	155	71	203	41	201	122	214	96	39	212	165	134
Md.-Del.....	69	94	114	162	133	53	77	125	102	81	195	79	105
Mich.....	121	79	67	77	123	143	67	195	73	96	130	104	107
Minn.....	35	111	162	126	60	90	80	142	35	141	221	95	101
Miss.....	62	128	78	144	58	146	206	90	78	47	155	142	114
Mo.....	61	80	77	114	51	90	42	148	17	60	133	126	81
Mont.....	70	188	102	197	56	82	119	26	140	128	112	47	100
Nebr.....	131	83	144	91	30	75	52	67	57	93	136	133	74
Nev.....	196	159	94	159	26	84	3	16	276	154	80	175	125
N. Eng.....	60	101	129	159	138	106	97	49	106	37	171	96	103
N. J.....	54	84	136	156	169	88	57	125	124	69	147	82	107
N. Mex.....	105	168	75	74	161	89	61	98	94	61	258	165	104
N. Y.....	58	116	144	130	109	115	85	71	98	66	125	134	103
N. C.....	84	86	74	98	91	76	73	191	37	39	159	79	92
N. Dak.....	21	133	114	152	54	65	148	99	67	147	95	81	101
Ohio.....	48	123	88	177	122	127	51	124	52	64	126	109	101
Okla.....	54	162	21	148	82	91	116	112	92	57	232	108	103
Oreg.....	77	210	132	105	56	25	136	10	237	153	87	89	113
Pa.....	43	106	142	154	114	98	76	110	99	62	141	97	103
S. C.....	99	105	87	68	78	72	62	179	34	31	178	76	90
S. Dak.....	36	109	156	125	20	85	68	98	45	79	100	68	79
Tenn.....	43	119	107	103	79	95	93	103	35	67	98	72	86
Tex.....	43	128	53	99	91	176	75	118	48	96	273	170	113
Utah.....	188	178	89	123	19	79	43	53	272	132	132	157	123
Va.....	78	85	69	132	117	93	115	213	50	56	176	80	107
Wash.....	59	199	124	117	78	25	179	49	112	164	76	83	103
W. Va.....	40	123	94	146	123	157	97	118	98	65	118	69	103
Wis.....	75	91	71	98	101	162	76	191	34	86	179	106	108
Wyo.....	153	129	90	158	41	86	92	46	201	89	137	76	103

In the warm, or growing season, percentages of normal precipitation are of more vital interest and in this connection attention is called to figure 2 in regard to their distributions relative to the normal of 100, and especially to the marked deficiency in Nebraska (61), California (67), South Dakota (73), Illinois (75), and Missouri (76).

The actual values in inches of the monthly section averages of precipitation, the extremes of which have been mentioned already, are given in table 3, from which the annual march of monthly amounts may be readily

noted, as is the march of percentages of normal in table 2.

One feature of the distribution of rainfall that is not to be omitted from this short summary is the heavy precipitation over more or less widespread areas in the southern tier of States from Eastern Texas to Florida in all months except January, March, May, and October, as shown in the total precipitation charts in current issues of this Review. The marked annual excesses in this region, and also in California, stand out clearly on the Chart of Annual Precipitation Departure.

TABLE 3.—Monthly and Annual Precipitation (in inches), 1940

	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Ala.....	4.34	6.89	5.25	3.57	3.45	6.43	8.46	2.93	1.47	1.40	3.49	6.30	53.98
Ariz.....	.76	1.86	.22	.84	.33	.90	.95	2.26	2.76	1.63	1.16	3.70	17.37
Ark.....	1.56	3.31	2.39	6.93	3.62	4.35	4.14	4.96	1.83	1.91	5.93	3.86	44.79
Calif.....	8.41	8.44	4.30	1.28	.63	.08	.01	.01	.40	1.76	1.42	9.16	35.90
Colo.....	1.42	1.27	1.27	1.56	1.74	.79	1.66	1.43	2.79	.83	1.01	1.11	16.88
Fla.....	2.58	4.56	3.53	2.77	1.99	6.89	8.31	7.18	6.72	.83	1.20	5.77	52.33
Ga.....	4.44	5.34	4.03	3.03	2.14	4.68	6.09	7.09	1.04	.89	3.73	4.14	47.24
Idaho.....	2.47	3.56	2.36	2.18	.55	.72	.75	.10	3.32	2.18	2.03	1.74	21.96
Ill.....	1.47	1.61	2.02	4.08	3.24	2.92	1.53	4.01	.64	2.14	2.89	2.05	28.60
Ind.....	1.67	2.50	1.89	5.58	4.14	3.11	1.49	2.74	1.17	2.23	3.59	2.37	32.57
Iowa.....	.83	1.18	1.72	3.23	2.07	3.56	4.56	6.44	.94	2.32	2.45	1.36	30.65
Kan.....	.82	.93	1.31	2.97	3.76	2.68	1.58	4.39	2.50	1.05	2.66	1.02	25.67
Ky.....	1.67	4.56	5.02	4.88	3.50	3.39	2.68	3.57	1.97	.74	3.70	3.16	38.84
La.....	2.96	7.15	3.41	9.44	1.89	9.33	7.51	10.83	3.74	1.28	8.21	8.92	74.67
Md.-Del.....	2.23	2.91	3.92	5.78	4.55	2.09	3.28	5.38	3.31	2.34	4.98	2.48	43.25
Mich.....	2.27	1.16	1.45	1.97	3.93	4.45	1.91	5.16	2.35	2.63	3.22	2.16	32.66
Minn.....	.26	.81	1.93	2.59	1.91	3.67	2.68	4.51	1.01	2.77	2.59	.75	25.48
Miss.....	3.09	6.27	4.55	6.96	2.59	6.09	10.38	3.84	2.40	1.24	5.64	7.53	60.58
Mo.....	1.35	1.54	2.44	4.41	2.44	4.36	1.58	5.78	.69	1.73	3.46	2.58	32.41
Mont.....	.66	1.43	1.01	2.19	1.19	2.02	1.65	.28	1.86	1.37	1.13	.46	15.25
Nebr.....	.72	.60	1.58	2.24	1.07	2.81	1.75	1.88	1.22	1.49	1.06	.93	17.35
Nev.....	2.31	1.62	.92	1.24	.23	.41	.01	.08	1.13	.86	.52	1.70	11.03
N. Eng.....	2.05	3.19	4.22	5.28	4.60	3.62	3.61	1.88	3.98	1.29	5.90	3.13	42.75
N. J.....	1.94	3.03	5.14	5.62	6.32	3.28	2.73	5.96	4.41	2.36	4.66	3.00	48.45
N. Mex.....	.59	1.19	.56	.66	1.85	1.10	1.55	2.45	1.52	.70	1.70	1.14	15.01
N. Y.....	1.70	3.12	4.36	3.87	3.78	4.21	3.36	2.68	3.37	2.17	3.78	3.89	40.29
N. C.....	3.07	3.50	3.12	3.46	3.81	3.56	4.26	10.57	1.48	1.28	4.19	3.00	45.30
N. Dak.....	.10	.61	.87	2.22	1.97	2.24	3.70	2.05	1.06	1.66	.69	.42	17.39
Ohio.....	1.46	3.17	2.96	5.53	4.51	4.79	1.93	4.18	1.54	1.63	3.45	3.00	38.15
Okla.....	.79	2.19	.46	5.03	3.87	3.49	3.47	3.36	2.83	1.71	4.75	1.83	33.78
Oreg.....	2.93	6.50	3.64	2.08	.97	.30	.61	.04	2.87	2.94	3.27	4.00	29.55
Pa.....	1.41	3.16	4.89	5.30	4.46	4.11	3.25	4.57	3.41	2.03	4.04	3.07	43.70
S. C.....	3.52	4.50	3.38	2.07	2.84	3.45	3.60	10.22	1.39	.93	4.13	2.76	42.79
S. Dak.....	.19	.62	1.75	2.70	.61	3.01	1.76	2.24	.75	1.02	.67	.39	15.71
Tenn.....	2.02	5.18	5.77	4.55	3.29	4.04	4.08	4.14	1.07	1.91	3.52	3.31	42.88
Tex.....	.83	2.38	1.11	3.06	3.36	5.48	1.97	2.85	1.04	2.52	6.22	3.86	35.04
Utah.....	2.24	2.19	1.24	1.46	.23	.44	.38	.56	2.72	1.39	1.25	1.68	15.78
Va.....	2.46	2.62	2.58	4.34	4.46	3.87	5.16	9.26	1.71	1.63	4.27	2.45	44.67
Wash.....	2.92	7.31	4.12	2.79	1.56	.40	1.18	.37	2.03	4.85	3.97	5.40	36.00
W. Va.....	1.44	3.84	3.70	5.13	4.93	5.97	4.43	4.83	2.88	1.80	3.27	2.31	44.53
Wis.....	.89	1.05	1.25	2.50	3.63	6.56	2.73	6.10	1.24	2.13	3.35	1.39	32.82
Wyo.....	1.19	.98	1.05	2.52	.87	1.38	1.20	.51	2.29	.97	.96	.56	14.48

METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR FEBRUARY 1941

[Climate and Crop Weather Division, J. B. KINCE in charge]

AEROLOGICAL OBSERVATIONS

By EARL C. THOM

Mean surface temperatures for February were above normal over about two-thirds of the United States (chart I). Temperatures were below normal for the month from the southern Great Lakes southwestward to the Texas Panhandle, and were above normal over all other sections. A small area in northern Montana had a mean temperature 12° F. above normal for the month while the largest opposite departure, -8° F., occurred along the southern Atlantic coast.

At the 1,500 m. level the 5 a. m. resultant winds were from directions to the north of normal for the month at most stations in the eastern two-thirds of the country, while at this level resultant winds showed the opposite turning from normal at all stations to the westward. At 13 of the pilot-balloon stations, for which 5 a. m. normals are available, February resultants were not computed for the 3,000 m. level since less than 10 of the morning observa-

tions at these stations reached this level. At all stations west of the Great Divide, for which this comparison could be made, the directions of the resultant winds were to the south of normal at 3,000 meters while, with only two exceptions, the opposite turning from normal occurred at this level at all of the corresponding stations to the eastward.

It is interesting to note that a large area of above-normal precipitation was reported over the southwest, the west central, and over the west Gulf areas (chart V). This area was divided into two well-defined portions; one of these, the larger, lying west of the Great Divide, and the other including all of the States of Texas, Oklahoma, and parts of Kansas, Arkansas, and Louisiana. It appears likely that the directions of the resultant winds being considerably to the south of the corresponding normal directions over the areas west of the Great Divide at both the 1,500 m. and the 3,000 m. levels was responsible for more than normal amount of free-air moisture in these sections of the United States.

Nine stations of those for which 5 a. m. normals are available for the 5,000 m. level had 10 or more 5 p. m. observations which reached this higher level. At 3 of these stations, all in the northwest, the directions of the 5 p. m. resultant winds were considerably south of the corresponding 5 a. m. normals. At the other 6 widely scattered stations the evening resultants for the month at 5,000 meters were from directions to the north of the morning normals for this level.

The departure of the 5 a. m. resultant velocities from normal for the month at the 1,500 m. level were about equally distributed over the United States. The resultant velocities at this level were above normal along the Pacific coast, below normal along the northern half of the Atlantic coast, while the positive and negative departures from normal velocity were distributed without any well-defined areas over most of the country. At 3,000 meters resultant velocities were below normal over all of the Rocky Mountain Plateau region. At only 12 widely scattered stations outside of this region could this comparison be made for the month at this level. At 8 of these stations resultant velocities were above normal while they were below normal over the other four. At 2 of the 9 stations at which the 5 p. m. resultants at 5,000 meters could be compared with the 5 a. m. normals for the month, the afternoon resultant velocities were below the morning normals while they were above these normals at the other 7 stations.

The directions of the 5 p. m. resultant winds were to the south of the direction of the corresponding 5 a. m. resultant winds at 1,500 meters over the area west of the Great Divide, and a portion of the southeastern States, while no well-defined areas of definite turning of the resultant winds during the day were noted elsewhere at this level. There were 12 of the stations (shown in table 2) at which 5 a. m. resultants were not computed this month for the 3,000 m. level. At 2 of the stations on the Pacific coast and at 5 stations near the Gulf of Mexico the directions of the 5 p. m. resultant winds were to the north of the corresponding morning winds at this level while the opposite turning in resultant winds during the day was indicated at most of the other stations at which these directions could be compared.

The 5 p. m. resultant velocities for the month were lower than the 5 a. m. resultant velocities at the 1,500 m. level over the northeast, the north central and over most of the south central States and were higher than the morning velocities for this level at most stations in the other sections of the United States. At 3,000 meters only 7 stations, all located in the Rocky Mountain Plateau region, had 5 p. m. resultant velocities lower than the corresponding 5 a. m. velocities. The afternoon velocities were higher than the morning velocities at this level over all other stations, being especially pronounced over the southeastern States.

The upper-air data discussed above are based on 5 a. m. (e. s. t.) observations (charts VIII and IX) as well as on observations made at 5 p. m. (table 2, and charts X and XI).

At radiosonde and airplane stations in the United States proper the highest mean pressure was recorded at Brownsville at the 1,000 m., 2,000 m., 4,000 m., and 5,000 m. levels and again at the 14,000 m., 15,000 m., and 16,000 m., levels. The same maximum mean pressure for each level was recorded at both Brownsville and Miami at the 1,500, 2,500, and 6,000 m. levels while the maximum mean pressure for the month was observed over Miami at all standard levels from 7,000 to 13,000 meters, inclusive. The lowest mean pressure for the

month was observed over Portland, Maine, at standard levels, from 1,000 to 4,000 meters inclusive, and over Sault Ste. Marie at standard levels from 5,000 to 16,000 meters.

At each of the standard levels below 13,000 meters the mean pressures over Nome, Alaska, were lower than the minimum pressures reported for the corresponding levels over stations in the United States proper. Mean pressure for the month at most standard levels over Fairbanks and over other Alaskan stations south of 65° N. latitude, however, while lower than the mean pressure over most stations in the United States were not as low as the corresponding minima. Mean pressures at all standard levels below 17,000 meters were higher over San Juan than the corresponding maxima for stations in the United States.

With but few exceptions mean pressures were lower in February than in the previous month over the United States at all standard levels below 12,000 meters. At levels above 12,000 meters mean pressures were either the same as, or slightly higher than, in January over most of the country, only six stations reporting small negative pressure changes at one or more of these higher levels. Over Fairbanks and over all radiosonde stations in Alaska south of 64° N. latitude, mean pressures were higher than in January at all reported standard levels above 1,000 meters (m. s. l.), while at Nome mean pressures were lower than last month at standard levels up to 9,000 meters and were slightly higher above that level.

The largest difference between the maximum and minimum mean monthly pressure at any level for stations in the United States was 34 mb. at 8,000 meters. Steep pressure gradients appear on the mean pressure charts, extending from north to south across the eastern third of the country particularly at the standard levels from 5,000 to 9,000 meters. At the 7,000 and 8,000 m. levels, for example, a change of 1 mb. is noted for each 44 miles of horizontal distance between Sault Ste. Marie and Pensacola.

The February mean temperatures were generally higher than those in January for stations in the western third of the United States at all standard levels below 8,000 meters and were generally lower than last month at these levels over most stations to the eastward. With but few exceptions mean temperatures were higher than last month over all stations in the United States at levels above 8,000 meters. Mean temperatures for the month were higher than those for January over all radiosonde stations in Alaska (Barrow data not available) north of 60° N. latitude at most levels, the only exception being small opposite temperature changes over Nome at levels from 2,000 to 5,000 meters. At Ketchikan and at Juneau mean temperatures were higher than in January at standard levels from 1,500 to 10,000 meters, inclusive, and were lower at all higher levels at which mean temperatures could be compared.

Mean temperatures at nearly all standard levels below 2,500 meters were higher than those for February 1940 over stations west of the Great Divide and over stations in the south central and gulf coast regions while mean temperatures at these levels were generally lower than last year over all other stations reporting data for this month in both 1941 and 1940. Almost without exception, mean temperatures were higher than in February of last year at standard levels from 2,500 to 6,000 m., inclusive, over all stations west of a line drawn across the United States through Williston, N. Dak., and Shreveport, La., and were lower than last year over stations east of this line. At most stations in the United States temperatures were higher than in February last year at all standard levels

above 8,000 meters. Mean temperatures were higher than last year at all levels over Fairbanks, Alaska, and at levels below 9,000 meters over Juneau but they were slightly lower than in February 1940 at all the higher levels over the latter station.

The mean surface temperature for February, as recorded by radiosonde observations, was 0° C. or lower over all of the northern half of the United States except at Medford, Seattle, and Spokane. At Ely and at Denver, where the mean surface temperatures were below freezing, temperature inversions observed during the month resulted in two levels above the surface at which the mean temperature was 0° C., the upper of these two levels being about 2,100 meters (m. s. l.) at Denver and 2,000 meters at Ely. The level at which the mean temperature was 0° C. over the rest of the United States varied from 500 meters (m. s. l.) over Nashville to 3,800 meters over both Miami and Brownsville. A monthly mean temperature of freezing occurred at lower levels than in January over Norfolk, Nashville, Charleston, and Pensacola and at higher levels than last month at all other stations.

The lowest temperature recorded in the free air over the United States was -81° C. (-115.2° F.) recorded on

February 14, at a height of 16,400 meters (about 10 miles) above sea level over Miami, Fla. A lower temperature -91.6° C. (-132.9°) was, however, recorded at 17,000 meters over Swan Island on February 16.

Table 3 shows the maximum free-air wind velocities and their directions for various sections of the United States during February as determined by pilot-balloon observations. The highest wind velocity reported for the month was 91.6 meters per second (204.9 m. p. h.) observed over Albuquerque, N. Mex., on February 9. This high wind was blowing from the NNW. at an altitude of 9,820 meters (about 6 miles) above sea level.

The highest wind velocity observed in the free-air layer below 2,500 meters during February in the last five years was 49.0 m. p. s. over Sandberg, Calif., in 1939. In the free-air layer from 2,500 to 5,000 meters the highest February wind velocity during this period was 80.0 m. p. s. over Winslow, Ariz., in 1941, while at levels above 5,000 meters the corresponding extreme occurred this year. (See previous paragraph.)

Tropopause data formerly shown in table 4 and on chart XIII are discontinued with this issue of the MONTHLY WEATHER REVIEW.

TABLE 1.—Mean free-air barometric pressure in millibars, temperature in degrees centigrade, and relative humidities in percent obtained by airplanes and radiosondes during February 1941

Altitude (meters) m. s. l.	Stations with elevations in meters above sea level																							
	Anchorage, Alaska (41 m.)				Atlantic Station No. 2 (3 m.) ⁴				Barrow, Alaska (6 m.)				Bethel, Alaska (7 m.)				Bismarck, N. Dak. (505 m.)				Brownsville, Tex. (6 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	28	1,001	-1.6	72	25	1,012	15.1	77	---	---	---	---	27	1,000	-7.5	79	27	960	-11.2	84	28	1,017	+13.8	92
500	28	945	-1.2	70	25	954	10.9	82	---	---	---	---	27	939	-3.6	72	---	---	---	---	28	959	+13.1	86
1,000	28	887	-2.4	67	25	898	7.4	82	---	---	---	---	27	881	-4.7	70	27	901	-9.4	80	28	904	+11.8	74
1,500	28	832	-5.2	66	25	845	5.0	78	---	---	---	---	27	827	-7.2	68	27	845	-7.8	71	28	851	+10.3	66
2,000	28	780	-8.5	66	25	794	2.8	73	---	---	---	---	27	775	-10.4	68	27	791	-8.1	66	28	801	+8.9	59
2,500	28	732	-11.5	66	24	747	1.1	62	---	---	---	---	27	726	-13.7	67	27	742	-9.5	64	28	754	+7.2	50
3,000	28	686	-14.7	66	24	701	-1.3	56	---	---	---	---	27	679	-17.1	64	27	695	-11.6	62	28	710	+5.0	47
4,000	28	600	-21.0	65	24	618	-7.1	52	---	---	---	---	27	593	-23.3	59	27	610	-17.1	63	27	627	-0.9	44
5,000	28	523	-27.8	64	23	543	-13.9	49	---	---	---	---	27	517	-30.1	56	27	533	-23.3	64	26	553	-7.8	48
6,000	27	454	-34.4	62	20	475	-20.7	52	---	---	---	---	26	448	-36.8	54	27	464	-30.2	63	26	485	-14.7	49
7,000	27	393	-41.1	---	18	414	-27.6	53	---	---	---	---	26	387	-43.4	---	27	402	-37.6	62	26	424	-21.2	46
8,000	27	338	-47.3	---	17	359	-35.2	---	---	---	---	---	26	333	-49.1	---	26	347	-44.5	---	26	370	-38.2	44
9,000	26	290	-51.9	---	14	310	-42.6	---	---	---	---	---	25	286	-51.0	---	24	298	-50.5	---	26	321	-35.1	42
10,000	25	249	-53.6	---	11	267	-48.2	---	---	---	---	---	25	245	-50.0	---	24	256	-55.3	---	26	278	-41.9	---
11,000	24	214	-51.0	---	10	229	-51.6	---	---	---	---	---	25	211	-46.9	---	24	219	-54.9	---	26	239	-47.7	---
12,000	23	183	-47.9	---	8	196	-52.3	---	---	---	---	---	24	181	-45.7	---	24	187	-52.0	---	26	205	-52.8	---
13,000	23	158	-47.3	---	7	168	-51.4	---	---	---	---	---	22	156	-43.1	---	24	160	-51.4	---	26	175	-57.3	---
14,000	23	135	-47.3	---	7	145	-52.4	---	---	---	---	---	19	134	-43.6	---	23	137	-51.9	---	26	150	-61.3	---
15,000	23	117	-47.6	---	7	125	-54.7	---	---	---	---	---	15	116	-43.4	---	18	118	-52.8	---	26	127	-66.1	---
16,000	17	100	-48.1	---	6	106	-56.9	---	---	---	---	---	11	99	-44.3	---	16	101	-53.7	---	25	108	-70.1	---
17,000	14	86	-48.5	---	6	91	-56.5	---	---	---	---	---	8	85	-44.7	---	11	86	-54.4	---	22	91	-71.5	---
18,000	9	74	-49.0	---	---	---	---	---	---	---	---	---	5	72	-44.8	---	---	---	---	---	16	77	-70.2	---
19,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10	65	-66.5	---
20,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	6	55	-63.2	---
21,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5	47	-62.0	---

See footnotes at end of table.

TABLE 1.—Mean free-air barometric pressure in millibars, temperature in degrees centigrade, and relative humidities in percent obtained by airplanes and radiosondes during February 1941—Continued

Altitude (meters) m. s. l.	Stations with elevations in meters above sea level																											
	Buffalo, N. Y. (221 m.)				Charleston, S. C. (14 m.)				Coco Solo, C. Z. ^{1 2} (1 m.)				Denver, Col. (1,616 m.)				El Paso, Tex. (1,193 m.)				Ely, Nev. (1,908 m.)				Fairbanks, Alaska (153 m.)			
	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity
Surface	28	987	-5.8	85	28	1,015	3.5	79	21	1,013	26.5	85	28	837	-1.2	78	28	882	9.4	62	28	807	-0.3	86	28	991	-8.0	59
500	28	952	-5.9	88	28	956	6.0	65	21	958	23.5	91	28	800	-1.5	82	28	850	9.6	62	28	807	-0.3	86	28	947	-5.0	58
1,000	28	893	-8.2	88	28	899	4.2	60	21	904	20.4	85	28	752	-2.9	82	28	750	-1.4	76	28	750	-1.4	76	28	890	-6.5	56
1,500	28	837	-10.0	84	28	845	2.2	57	21	853	18.1	75	28	707	-0.1	63	28	704	-4.4	73	28	704	-4.4	73	28	834	-7.4	52
2,000	27	784	-11.5	79	28	794	0.5	53	21	804	15.7	71	28	623	-6.1	59	28	619	-10.5	66	28	619	-10.5	66	28	782	-9.9	49
2,500	27	735	-13.2	75	28	746	-0.7	49	20	758	13.4	66	28	548	-12.3	52	28	543	-17.3	59	28	543	-17.3	59	28	732	-12.9	48
3,000	27	688	-14.9	71	28	701	-2.1	46	19	714	11.3	45	28	480	-19.1	50	28	474	-24.2	57	28	474	-24.2	57	28	686	-16.1	49
4,000	27	602	-19.7	67	28	617	-1.9	44	16	633	5.0	36	28	419	-26.6	49	28	413	-31.3	53	27	413	-31.3	53	27	600	-22.6	50
5,000	27	526	-25.8	65	26	542	-13.9	44					27	363	-33.9	48	28	358	-39.3	51	26	358	-39.3	51	26	522	-29.3	49
6,000	27	457	-32.3	62	26	474	-20.1	42					25	474	-25.2	50	28	480	-26.6	49	28	413	-31.3	53	27	392	-42.6	
7,000	27	395	-39.2	62	26	413	-27.6	40					25	412	-32.7	48	27	363	-33.9	48	28	413	-31.3	53	27	337	-49.3	
8,000	26	341	-45.4		25	359	-34.9	40					25	356	-40.2		27	363	-33.9	48	28	413	-31.3	53	27	337	-49.3	
9,000	25	293	-50.5		25	310	-42.1						24	307	-47.1		25	314	-40.7		27	308	-46.7		25	289	-53.7	
10,000	24	251	-53.0		24	267	-47.9						23	264	-53.5		25	271	-47.0		26	265	-53.6		25	248	-54.0	
11,000	24	216	-50.3		23	230	-51.2						22	222	-56.6		24	233	-51.2		24	227	-55.1		23	212	-51.2	
12,000	24	185	-49.3		22	197	-54.3						21	192	-54.9		24	199	-53.9		24	194	-53.4		23	182	-48.3	
13,000	23	158	-50.2		20	168	-56.3						20	164	-55.5		21	170	-56.9		21	166	-53.6		21	156	-47.2	
14,000	23	136	-51.6		19	143	-59.0						19	140	-57.3		19	145	-60.7		21	142	-54.9		20	134	-47.3	
15,000	19	116	-53.1		16	122	-61.2						19	120	-59.3		17	124	-64.4		21	122	-57.7		20	115	-48.3	
16,000	14	100	-54.3		12	104	-62.6						18	102	-60.9		15	105	-66.8		20	104	-59.8		20	98	-48.8	
17,000	11	85	-55.7		11	88	-63.9						18	87	-61.5		15	89	-67.4		18	88	-61.0		14	85	-49.1	
18,000					8	75	-64.1						9	74	-62.0						13	75	-61.8		6	72	-49.5	
19,000					6	64	-62.5														5	64	-60.8					

Altitude (meters) m. s. l.	Stations with elevations in meters above sea level																											
	Great Falls, Mont. (1,117 m.)				Joliet, Ill. (178 m.)				Juneau, Alaska (49 m.)				Ketchikan, Alaska (26 m.)				Lakehurst, N. J. ¹ (39 m.)				Medford, Oreg. (401 m.)				Miami, Fla. (4 m.)			
	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity
Surface	28	887	-2.8	64	28	996	-5.5	89	27	1,007	1.5	66	28	1,010	2.5	72	26	1,009	-4.3	72	27	965	7.3	77	27	1,015	14.8	88
500					28	955	-6.3	89	27	952	-1.0	67	26	952	0.9	67	26	951	-5.3	67	27	953	7.8	75	27	958	14.8	80
1,000					28	896	-7.8	84	27	894	-3.8	66	26	895	-2.3	65	26	893	-6.9	64	27	897	6.7	68	27	903	12.3	77
1,500	28	846	-2.1	64	28	840	-8.5	77	27	838	-6.4	68	26	840	-4.1	62	26	837	-8.1	61	27	843	3.4	69	27	851	9.8	69
2,000	28	794	-3.3	62	28	788	-9.7	70	27	786	-8.2	68	26	788	-6.3	57	26	784	-9.3	56	27	793	0.4	69	27	800	8.3	58
2,500	28	745	-5.0	62	28	739	-10.9	65	27	737	-10.3	63	26	738	-9.0	55	26	735	-11.3	54	27	745	-2.8	68	27	754	6.7	48
3,000	28	699	-8.1	62	28	691	-12.7	61	24	690	-12.9	60	26	692	-11.8	53	26	688	-13.7	51	27	699	-5.5	61	27	709	4.2	44
4,000	28	614	-14.0	56	28	606	-17.8	58	24	604	-18.8	55	26	606	-18.3	51	26	602	-18.8	52	27	614	-11.6	57	27	626	-1.0	42
5,000	28	537	-20.5	51	27	530	-24.0	57	20	528	-25.4	51	28	530	-24.6	50	26	526	-25.2	52	26	539	-18.3	55	26	552	-6.8	42
6,000	28	469	-27.4	50	27	461	-30.4	55	16	459	-32.2	50	23	461	-31.2	50	26	458	-31.4	51	26	470	-25.5	53	26	485	-13.4	42
7,000	28	407	-34.9	50	26	400	-37.3	53	14	396	-39.1		23	399	-38.6	50	26	396	-37.0	53	26	409	-32.9	51	26	425	-20.0	44
8,000	28	352	-42.6		26	345	-43.9		14	342	-45.9		22	344	-46.0		24	342	-42.8		26	354	-40.2		26	371	-26.9	42
9,000	28	303	-50.0		26	296	-50.0		13	293	-52.0		21	295	-52.2		23	294	-47.7		26	304	-47.6		26	322	-34.2	39
10,000	27	259	-56.0		25	254	-54.0		12	250	-54.7		21	252	-55.1		21	253	-49.7		26	261	-53.8		26	279	-41.4	
11,000	27	222	-58.3		24	217	-54.5		12	214	-53.7		20	216	-54.8		21	218	-49.9		26	224	-56.4		24	240	-48.2	
12,000	26	189	-55.5		24	186	-53.3		11	183	-51.2		18	184	-52.4		18	187	-50.6		26	191	-54.8		23	206	-54.0	
13,000	25	162	-53.5		24	159	-53.0		10	157	-51.1		18	158	-51.1		15	161	-52.5		25	164	-54.5		22	176	-59.7	
14,000	25	139	-53.6		24	136	-53.8		10	134	-50.5		17	135	-51.1		15	139	-54.5		25	140	-55.3		21	149	-64.8	
15,000	24	119	-54.8		21	116	-55.1		8	114	-50.8		16	116	-51.6		13	119	-56.3		23	120	-56.1		20	126	-70.0	
16,000	22	102	-55.8		19	99	-56.8		6	98	-51.4		14	99	-52.1		8	102	-58.3		19	102	-58.0		19	107	-74.5	
17,000	19	87	-56.2		18	84	-57.8						5	87	-60.3						15	87	-59.2		17	90	-76.0	
18,000	10	74	-56.4		15	72	-58.2						11	74	-59.5		11	74	-59.5		14	76	-59.5		14	76	-74.6	
19,000					10	61	-58.3						7				62	-60.0		10	64	-70.0		5	64	-70.0		
20,000																					5	54	-66.7					

See footnotes at end of table.

TABLE 1.—Mean free-air barometric pressure in millibars, temperature in degrees centigrade, and relative humidities in percent obtained by airplanes and radiosondes during February 1941—Continued

Altitude (meters) m. s. l.	Stations with elevations in meters above sea level																											
	Nashville, Tenn. (180 m.)				Nome, Alaska (14 m.)				Norfolk, Va. ^{1 2} (10 m.)				Oakland, Calif. (2 m.)				Oklahoma City, Okla. (391 m.)				Omaha, Nebr. (301 m.)				Pearl Harbor, T. H. (6 m. ^{1 2})			
	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity
Surface	28	997	1.0	70	28	1,005	-9.4	75	17	1,018	0.1	61	28	1,013	11.0	88	23	972	3.3	76	28	984	-3.9	81	28	1,016	18.9	82
500	28	958	0.0	72	28	944	-9.4	77	17	967	-1.1	50	28	955	10.2	81	23	980	4.0	75	28	960	-4.6	79	28	960	18.0	74
1,000	28	900	-2.3	73	28	885	-10.4	74	17	899	-2.9	42	28	899	7.7	76	23	902	3.4	65	28	901	-5.1	69	28	906	15.0	77
1,500	28	845	-3.4	71	28	829	-12.4	69	17	843	-4.4	39	28	846	5.1	71	23	848	2.8	59	28	846	-4.1	61	28	854	12.5	73
2,000	28	793	-4.5	70	28	776	-15.0	64	17	791	-6.3	33	28	795	2.2	67	23	797	1.2	58	28	793	-5.0	56	28	804	10.9	59
2,500	28	744	-5.9	66	28	726	-17.9	62	17	742	-7.2	28	28	747	-0.4	62	23	749	0.0	54	28	744	-6.7	56	28	757	10.7	32
3,000	28	698	-8.0	65	28	678	-20.7	60	17	696	-8.8	24	28	702	-2.9	59	23	703	-2.5	53	28	698	-8.9	55	28	714	9.4	21
4,000	27	613	-12.6	61	28	592	-26.7	56	17	611	-12.9	23	27	618	-9.1	55	23	619	-8.8	51	28	613	-14.4	52	28	632	4.7	13
5,000	27	538	-18.7	56	28	514	-33.3	53	10	535	-19.0	24	27	542	-16.0	54	23	544	-15.2	49	27	537	-20.4	51	.....	.....	.....	.....
6,000	26	470	-25.3	51	27	446	-40.0	50	.....	.....	.....	.....	26	474	-23.3	52	22	475	-22.2	47	27	468	-27.4	50	.....	.....	.....	.....
7,000	26	409	-32.1	49	27	384	-45.9	.....	.....	.....	.....	.....	26	412	-30.6	50	20	414	-29.4	44	26	406	-35.1	49	.....	.....	.....	.....
8,000	26	354	-39.6	48	27	330	-50.5	.....	.....	.....	.....	.....	26	358	-38.4	50	20	359	-37.2	41	26	351	-42.4	44	.....	.....	.....	.....
9,000	24	305	-46.7	.....	27	283	-52.4	.....	.....	.....	.....	.....	25	308	-45.5	.....	19	310	-44.1	.....	25	302	-49.7	.....	.....	.....	.....	.....
10,000	24	262	-52.4	.....	27	242	-50.9	.....	.....	.....	.....	.....	25	265	-50.9	.....	18	267	-48.8	.....	23	259	-54.7	.....	.....	.....	.....	.....
11,000	24	224	-55.1	.....	27	208	-48.6	.....	.....	.....	.....	.....	24	227	-52.5	.....	17	229	-52.5	.....	23	222	-55.5	.....	.....	.....	.....	.....
12,000	22	192	-55.0	.....	26	179	-47.1	.....	.....	.....	.....	.....	24	194	-51.1	.....	17	196	-53.2	.....	23	189	-54.0	.....	.....	.....	.....	.....
13,000	22	164	-56.4	.....	25	153	-46.8	.....	.....	.....	.....	.....	24	166	-52.8	.....	17	167	-55.7	.....	23	162	-53.6	.....	.....	.....	.....	.....
14,000	20	140	-58.2	.....	24	132	-46.9	.....	.....	.....	.....	.....	24	143	-55.1	.....	16	143	-58.1	.....	22	138	-54.9	.....	.....	.....	.....	.....
15,000	16	119	-60.2	.....	24	114	-47.5	.....	.....	.....	.....	.....	24	122	-57.6	.....	12	122	-61.0	.....	21	118	-56.1	.....	.....	.....	.....	.....
16,000	16	101	-61.8	.....	22	97	-48.3	.....	.....	.....	.....	.....	23	104	-60.2	.....	11	103	-63.1	.....	21	101	-57.3	.....	.....	.....	.....	.....
17,000	12	86	-62.8	.....	12	84	-49.0	.....	.....	.....	.....	.....	18	89	-60.2	.....	8	88	-64.0	.....	18	86	-58.5	.....	.....	.....	.....	.....
18,000	7	73	-63.2	.....	5	72	-49.3	.....	.....	.....	.....	.....	14	75	-60.9	.....	.....	.....	.....	.....	7	73	-58.4	.....	.....	.....	.....	.....
19,000	7	.....	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	6	64	-60.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Altitude (meters) m. s. l.	Stations with elevations in meters above sea level																											
	Pensacola, Fla. ¹ (24 m.)				Phoenix, Ariz. (339 m.)				Portland, Maine (9 m.)				St. Louis, Mo. (171 m.)				St. Paul, Minn. (214 m.)				St. Thomas, V. I. ^{1 2} (8 m.)				San Diego, Calif. ¹ (19 m.)			
	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity
Surface	28	1,016	10.3	70	28	975	12.2	82	28	1,006	-6.1	76	28	999	-1.0	69	28	992	-9.2	81	28	1,017	25.2	80	25	1,012	14.3	87
500	28	960	8.2	64	28	957	14.3	69	28	946	-6.2	76	28	959	-2.2	70	28	958	-10.3	81	28	961	20.5	96	25	956	12.7	76
1,000	28	903	6.4	59	28	902	12.1	61	28	888	-7.6	73	28	900	-4.4	70	28	898	-10.3	82	28	907	17.2	95	25	900	10.0	69
1,500	28	849	5.3	52	28	849	8.7	62	28	832	-8.6	69	28	844	-5.0	70	28	841	-9.1	76	28	856	14.6	86	25	847	7.1	64
2,000	28	799	3.6	46	28	799	5.3	63	28	780	-10.7	67	28	792	-5.8	66	28	788	-9.9	71	28	806	13.0	68	25	798	4.8	53
2,500	28	750	1.3	42	28	751	2.2	61	28	731	-12.8	66	28	743	-7.5	60	28	739	-12.1	66	28	760	11.4	53	25	750	2.5	47
3,000	28	705	-0.8	40	28	706	-0.5	54	28	684	-14.7	64	28	696	-9.8	58	28	692	-14.0	64	28	715	9.2	42	25	705	0.3	38
4,000	28	621	-5.7	43	27	622	-6.2	46	27	598	-19.7	61	27	611	-14.8	55	28	606	-18.5	61	28	634	5.1	27	24	621	-5.7	33
5,000	28	547	-12.0	44	27	547	-12.8	43	26	523	-26.0	59	26	535	-20.7	53	27	529	-24.7	58	.....	.....	.....	.....	24	545	-12.2	38
6,000	28	479	-18.9	46	26	479	-19.6	42	26	455	-32.5	58	26	466	-27.2	50	27	461	-30.6	56	.....	.....	.....	.....	24	478	-19.4	45
7,000	28	418	-26.0	51	26	418	-27.0	41	25	394	-39.5	58	26	405	-34.0	47	27	399	-37.8	54	.....	.....	.....	.....	23	417	-26.5	48
8,000	23	363	-33.0	52	26	363	-34.3	40	24	339	-45.4	.....	24	350	-41.0	.....	26	344	-44.5	.....	.....	.....	.....	.....	21	362	-33.2	.....
9,000	20	314	-39.3	53	21	314	-41.6	.....	24	291	-49.8	.....	24	302	-47.6	.....	25	296	-50.1	.....	.....	.....	.....	.....	19	313	-39.9	.....
10,000	16	271	-45.8	.....	20	270	-46.8	.....	23	250	-51.9	.....	22	258	-53.3	.....	24	253	-53.2	.....	.....	.....	.....	.....	19	270	-45.7	.....
11,000	10	233	-52.3	.....	17	232	-50.1	.....	23	215	-50.8	.....	20	222	-54.7	.....	22	218	-53.0	.....	.....	.....	.....	.....	17	232	-49.5	.....
12,000	6	199	-58.6	.....	14	199	-51.3	.....	20	184	-50.2	.....	18	189	-53.1	.....	21	187	-51.4	.....	.....	.....	.....	.....	15	199	-52.4	.....
13,000	5	170	-63.8	.....	14	170	-53.5	.....	19	158	-50.3	.....	15	162	-53.5	.....	21	160	-50.7	.....	.....	.....	.....	.....	13	171	-56.0	.....
14,000	.....	.....	.....	.....	14	146	-56.2	.....	18	135	-51.5	.....	15	138	-54.4	.....	20	138	-51.7	.....	.....	.....	.....	.....	13	146	-59.0	.....
15,000	.....	.....	.....	.....	14	124	-59.3	.....	17	115	-52.6	.....	9	117	-56.4	.....	20	118	-52.8	.....	.....	.....	.....	.....	10	124	-61.4	.....
16,000	.....	.....	.....	.....	12	106	-62.2	.....	14	99	-53.7	.....	7	100	-58.5	.....	20	101	-53.9	.....	.....	.....	.....	.....	8	106	-64.4	.....
17,000	.....	.....	.....	.....	9	90	-62.8	.....	11	84	-55.5	.....	5	85	-58.8	.....	13	87	-54.3	.....	.....	.....	.....	.....	6	89	-67.0	.....
18,000	.....	.....	.....	.....	6	76	-63.0	.....	5	72	-57.0	.....	.....	.....	.....	.....	7	75	-55.1	.....	.....	.....	.....	.....	.....	.....	.....	.....

See footnotes at end of table.

TABLE 1.—Mean free-air barometric pressure in millibars, temperature in degrees centigrade, and relative humidities in percent obtained by airplanes radiosondes during February 1941—Continued

Altitude (meters) m. s. l.	Stations with elevations in meters above sea level																							
	San Juan, P. R. (15 m.)				Sault Ste. Marie, Mich. (221 m.)				Seattle, Wash. ¹ (27 m.)				Spokane, Wash. (598 m.)				Swan Island, W. I. (10 m.)				Washington, D. C. ¹ (7 m.)			
	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity	Number of ob- servations	Pressure	Temperature	Relative hu- midity
Surface	27	1,014	23.0	87	28	987	- 8.4	87	28	1,010	7.6	79	27	945	1.1	90	28	1,013	24.5	78	21	1,015	-1.5	86
500	27	959	21.1	84	28	952	- 9.3	89	28	954	7.5	63	28	899	1.7	83	28	957	20.9	86	21	954	-3.0	82
1,000	27	905	17.0	82	28	892	-10.6	89	28	898	4.5	61	27	849	0.1	75	28	904	18.0	83	21	896	-5.2	84
1,500	27	854	15.6	74	28	836	-11.5	85	28	844	1.4	61	27	845	0.1	75	28	852	15.2	77	21	840	-7.2	82
2,000	27	805	14.2	58	28	783	-13.4	84	28	793	-1.3	59	27	793	-2.5	69	28	803	13.0	71	21	788	-6.8	80
2,500	27	758	11.8	45	28	733	-15.1	80	28	744	-4.5	59	27	745	-5.1	65	28	757	11.6	59	21	738	-10.5	55
3,000	27	714	9.2	38	28	686	-17.2	75	28	698	-7.5	56	27	699	-7.6	62	28	712	9.8	49	21	692	-12.1	51
4,000	27	632	4.9	28	28	599	-22.2	70	27	613	-13.9	51	27	614	-13.8	59	28	631	4.8	35	20	606	-16.6	49
5,000	27	559	-0.6	25	28	522	-28.3	67	27	536	-20.7	49	27	537	-20.7	57	27	558	-0.6	30	17	529	-22.1	47
6,000	27	492	-7.1	23	27	454	-35.4	67	27	467	-28.1	50	27	468	-27.9	54	27	491	-6.8	27	17	461	-28.0	47
7,000	25	432	-13.6	22	27	392	-42.5	67	27	406	-35.5	54	27	406	-35.5	53	27	432	-13.5	25	9	399	-34.2	50
8,000	25	378	-20.6	22	27	337	-48.6	67	27	351	-43.0	54	27	351	-42.9	53	27	378	-20.7	24	6	347	-40.2	50
9,000	25	329	-28.1	22	25	289	-53.1	67	27	302	-49.5	54	27	302	-49.6	53	27	329	-28.0	23	6	299	-46.6	50
10,000	24	286	-35.9	22	25	247	-53.8	66	27	259	-55.2	54	27	259	-55.6	53	27	286	-35.0	23	6	259	-55.6	53
11,000	19	247	-43.6	22	25	212	-51.6	66	27	221	-57.8	54	27	221	-57.9	53	27	247	-42.9	23	6	221	-57.9	53
12,000	19	213	-51.0	22	25	181	-50.6	66	27	189	-56.1	54	27	189	-55.6	53	27	212	-50.9	23	6	189	-56.1	53
13,000	18	182	-58.4	22	25	155	-51.0	66	27	162	-53.6	54	27	161	-53.8	53	26	182	-58.9	23	6	162	-53.6	53
14,000	18	154	-65.5	22	19	134	-51.9	66	27	138	-53.2	54	27	138	-53.9	53	23	154	-67.2	23	6	138	-53.2	53
15,000	13	130	-72.7	22	19	114	-52.9	66	27	118	-54.0	54	27	118	-54.3	53	22	130	-75.5	23	6	118	-54.0	53
16,000	11	110	-78.9	22	13	98	-53.7	66	27	100	-55.0	54	27	101	-55.9	53	22	109	-83.3	23	6	101	-55.0	53
17,000	11	92	-82.7	7	84	-54.4	66	27	85	-55.8	54	27	87	-56.1	53	20	91	-86.2	22	6	87	-56.1	53	
18,000	8	77	-79.8	7	84	-54.4	66	27	85	-55.8	54	27	87	-56.1	53	16	76	-80.3	22	6	87	-56.1	53	
19,000	6	65	-73.9	7	84	-54.4	66	27	85	-55.8	54	27	87	-56.1	53	7	64	-74.0	22	6	87	-56.1	53	

LATE REPORTS, TABLE 1, FOR NOVEMBER 1940

Altitude (meters) m. s. l.	Stations and elevations in meters above sea level								Altitude (meters) m. s. l.	Stations and elevations in meters above sea level							
	Swan Island, W. I. (10 m.)				St. Thomas, V. I. ^{1 2} (8 m.)					Swan Island, W. I. (10 m.)				St. Thomas, V. I. ^{1 2} (8 m.)			
	Number of obser- vations	Pressure	Temperature	Relative humidity	Number of obser- vations	Pressure	Temperature	Relative humidity		Number of obser- vations	Pressure	Temperature	Relative humidity	Number of obser- vations	Pressure	Temperature	Relative humidity
Surface.....	23	1,012	25.6	83	15	1,012	26.4	83	11,000.....	24	249	-42.8					
500.....	23	958	23.1	83	15	956	20.3	93	12,000.....	23	214	-50.9					
1,000.....	23	904	20.0	84	15	902	16.9	90	13,000.....	23	183	-58.9					
1,500.....	23	853	16.9	78	15	851	14.0	88	14,000.....	23	156	-66.1					
2,000.....	23	804	14.4	73	15	802	11.3	87	15,000.....	23	132	-72.2					
2,500.....	23	758	12.1	68	15	755	9.2	78	16,000.....	21	111	-75.8					
3,000.....	23	714	9.7	60	15	711	7.0	68	17,000.....	20	93	-78.3					
4,000.....	23	633	5.4	53	14	628	0.8	55	18,000.....	17	78	-77.8					
5,000.....	26	559	-0.1	44					19,000.....	14	66	-73.6					
6,000.....	26	493	-6.1	38					20,000.....	14	55	-69.6					
7,000.....	26	433	-12.3	35					21,000.....	13	47	-66.6					
8,000.....	26	379	-19.2	33					22,000.....	9	40	-63.3					
9,000.....	25	331	-26.5	32					23,000.....	6	33	-60.7					
10,000.....	24	288	-34.5	30													

¹ U. S. Navy.² Airplane observations.³ Observations made on Coast Guard vessels in or near the 5° square; lat. 35.00' N. to 40.00' N.; long. 55.00' W. to 60.00' W.⁴ Observations made on Coast Guard vessels in or near the 5° square; lat. 35.00' N. to 40.00' N.; long. 45.00' W. to 50.00' W.

NOTE.—All observations taken at 12:30 a. m. 75th meridian time, except at Washington, D. C., and Lakehurst, N. J., where they are taken near 5 a. m. E. S. T., at Norfolk, Va., where they are taken at about 6 a. m., and at Pearl Harbor, T. H., after sunrise.

None of the means included in this table are based on less than 15 surface or 5 standard level observations.

Number of observations refers to pressure only as temperature and humidity data are missing for some observations at certain levels, also, the humidity data are not used in daily observations when the temperature is below -40° C.

TABLE 2.—Free-air resultant winds based on pilot-balloon observations made near 5 p. m. (75th meridian time) during February 1941. Directions given in degrees from North (N=360°, E=90°, S=180°, W=270°)—velocities in meters per second

Altitude (meters) m. s. l.	Abilene, Tex. (537 m.)			Albuquerque, N. Mex. (1,630 m.)			Atlanta, Ga. (299 m.)			Billings, Mont. (1,095 m.)			Bismarck, N. Dak. (512 m.)			Boise, Idaho (870 m.)			Brownsville, Tex. (7 m.)			Buffalo, N. Y. (220 m.)			Burlington, Vt. (132 m.)			Charleston, S. C. (18 m.)			Chicago, Ill. (192 m.)			Cincinnati, Ohio (157 m.)			Denver, Colo. (1,627 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity			
Surface.....	23	265	1.4	28	294	1.5	27	318	4.5	28	273	1.3	28	307	1.2	24	108	1.4	23	46	1.5	26	270	4.6	27	318	1.1	27	289	2.4	25	289	3.7	28	293	2.7	27	53	1.9
500.....	23	270	2.1	27	270	2.1	27	310	5.0	26	306	5.0	28	297	3.4	24	118	1.9	18	33	2.3	23	42	1.4	26	257	6.2	27	262	2.1	27	287	4.3	25	289	4.0	28	276	4.7
1,000.....	16	246	2.4	27	281	4.8	25	302	8.5	28	256	2.2	27	299	5.5	24	149	3.6	15	18	1.6	26	266	6.9	26	272	5.0	26	285	6.3	20	308	5.1	25	266	5.3	27	276	6.9
1,500.....	16	281	4.8	28	268	2.4	22	308	10.2	28	275	3.9	25	309	8.1	24	159	4.0	13	287	4.6	14	293	7.5	25	283	7.6	24	281	9.6	15	291	5.5	22	276	6.9	27	276	6.9
2,000.....	16	296	6.3	28	272	3.0	20	306	12.6	26	283	5.7	21	311	10.2	21	195	5.5	13	288	6.9	11	303	7.6	12	313	12.9	19	271	14.5	12	288	9.4	13	287	14.3	24	290	5.8
2,500.....	16	297	8.8	28	275	5.1	18	295	14.2	22	284	8.3	20	307	10.7	20	211	5.4	11	307	9.5	11	297	9.6	12	313	12.9	17	269	15.4	11	293	15.4	12	289	15.0	22	303	9.9
3,000.....	14	305	11.9	22	283	9.2	17	286	19.4	20	305	7.1	19	313	15.2	15	214	6.7	10	299	12.3	11	297	9.6	12	313	12.9	17	269	15.4	11	293	15.4	12	289	15.0	22	303	9.9
4,000.....	12	305	14.8	19	277	13.4	14	292	19.3	19	293	12.8	16	313	18.6	13	235	7.5	10	299	12.3	11	297	9.6	12	313	12.9	17	269	15.4	11	293	15.4	12	289	15.0	22	303	9.9
5,000.....	12	305	14.8	19	277	13.4	14	292	19.3	19	293	12.8	16	313	18.6	13	235	7.5	10	299	12.3	11	297	9.6	12	313	12.9	17	269	15.4	11	293	15.4	12	289	15.0	22	303	9.9
6,000.....	10	289	17.9	19	283	17.2	12	294	22.4	15	295	13.2	14	311	22.0	13	235	7.5	10	299	12.3	11	297	9.6	12	313	12.9	17	269	15.4	11	293	15.4	12	289	15.0	22	303	9.9
8,000.....	10	289	17.9	19	283	17.2	12	294	22.4	15	295	13.2	14	311	22.0	13	235	7.5	10	299	12.3	11	297	9.6	12	313	12.9	17	269	15.4	11	293	15.4	12	289	15.0	22	303	9.9
10,000.....	10	289	17.9	19	283	17.2	12	294	22.4	15	295	13.2	14	311	22.0	13	235	7.5	10	299	12.3	11	297	9.6	12	313	12.9	17	269	15.4	11	293	15.4	12	289	15.0	22	303	9.9

Altitude (meters) m. s. l.	El Paso, Tex. (1,196 m.)			Ely, Nev. (1,910 m.)			Grand Junction, Colo. (1,413 m.)			Greensboro, N. C. (271 m.)			Havre, Mont. (766 m.)			Jacksonville, Fla. (14 m.)			Las Vegas, Nev. (570 m.)			Little Rock, Ark. (79 m.)			Medford, Oreg. (410 m.)			Miami, Fla. (10 m.)			Minneapolis, Minn. (261 m.)			Mobile, Ala. (10 m.)			Nashville, Tenn. (194 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity			
Surface.....	28	259	2.0	28	184	2.7	27	331	1.5	27	294	2.8	26	280	1.5	25	325	2.1	25	91	1.8	25	318	1.2	24	137	1.4	27	315	1.7	28	297	3.4	25	338	0.7	27	303	2.3
500.....	27	287	3.8	27	287	3.8	27	331	1.5	27	294	2.8	26	280	1.5	25	325	2.1	25	91	1.8	25	318	1.2	24	137	1.4	27	315	1.7	28	297	3.4	25	338	0.7	27	303	2.3
1,000.....	28	262	2.4	27	287	3.8	27	331	1.5	27	294	2.8	26	280	1.5	25	325	2.1	25	91	1.8	25	318	1.2	24	137	1.4	27	315	1.7	28	297	3.4	25	338	0.7	27	303	2.3
1,500.....	28	262	2.4	27	287	3.8	27	331	1.5	27	294	2.8	26	280	1.5	25	325	2.1	25	91	1.8	25	318	1.2	24	137	1.4	27	315	1.7	28	297	3.4	25	338	0.7	27	303	2.3
2,000.....	27	268	3.2	28	178	3.6	27	276	0.2	25	290	9.1	24	273	6.9	21	283	11.4	26	189	4.0	19	313	7.5	23	181	6.6	19	271	11.3	17	312	8.2	18	294	7.9	20	298	9.9
2,500.....	26	273	4.8	28	195	5.8	25	227	1.5	23	291	13.4	23	286	7.6	21	279	13.6	26	195	4.4	15	307	11.4	23	193	7.4	19	272	13.2	15	314	10.0	18	292	10.6	20	299	12.6
3,000.....	25	279	7.3	24	217	2.7	24	249	3.1	23	288	17.2	21	285	8.1	20	276	15.8	24	211	3.9	15	308	12.3	20	202	6.4	17	275	15.4	13	310	10.0	17	288	13.0	18	294	13.2
4,000.....	20	272	9.4	16	224	7.3	18	271	5.6	22	289	20.1	18	297	13.4	17	273	19.7	18	262	5.8	11	291	14.0	18	201	5.8	14	275	17.0	11	307	15.8	15	281	16.6	14	293	16.2
5,000.....	18	284	13.6	14	228	9.7	16	279	7.9	19	283	25.4	17	296	13.7	14	285	21.6	18	255	8.2	11	291	14.0	18	201	5.8	14	275	17.0	11	307	15.8	15	281	16.6	14	293	16.2
6,000.....	16	279	18.7	10	228	5.8	13	302	10.6	18	286	29.4	15	303	12.6	11	281	25.8	18	252	13.0	11	291	14.0	18	201	5.8	14	275	17.0	11	307	15.8	15	281	16.6	14	293	16.2
8,000.....	16	279	18.7	10	228	5.8	13	302	10.6	18	286	29.4	15	303	12.6	11	281	25.8	18	252	13.0	11	291	14.0	18	201	5.8	14	275	17.0	11	307	15.8	15	281	16.6	14	293	16.2

Altitude (meters) m. s. l.	New York, N. Y. (15 m.)			Oakland, Calif. (8 m.)			Oklahoma Okla. (402 m.)			Omaha, Nebr. (306 m.)			Phoenix, Ariz. (344 m.)			Rapid City, S. Dak. (982 m.)			St. Louis, Mo. (181 m.)			San Antonio, Tex. (183 m.)			San Diego, Calif. (15 m.)			Sault St. Marie, Mich. (230 m.)			Seattle, Wash. (14 m.)			Spokane, Wash. (603 m.)			Washington, D. C. (10 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity			
Surface.....	25	301	5.6	25	167	2.0	18	295	1.8	28	308	2.9	28	138	1.2	27	343	3.7	25	308	2.6	27	59	1.5	28	242	2.9	17	289	2.7	25	291	1.0	25	128	0.7	26	300	3.9
500.....	25	296	5.6	25	166	4.2	18	291	2.0	28	311	3.9	28	146	1.5	27	346	3.7	25	304	4.0	27	35	1.3	28	216	2.8	17	295	2.5	25	292	1.9	25	155	2.1	26	297	5.2
1,000.....	23	308	8.9	21	173	4.2	16	278	3.8	26	327	5.3	28	154	2.0	27	346	3.7	25	304	4.0	27	35	1.3	28	216	2.8	17	295	2.5	25	292	1.9	25	155	2.1	26	297	5.2
1,500.....	22	315	8.9	19	176	5.5	16	291	5.8	23	310	7.6	27	162	2.2	27	326	4.4	20	299	8.2	19	275	3.4	22	172	2.4	14	356	8.2	20	195	5.1	21	180	4.3	22	293	7.7
2,000.....	17	311	10.2	17	184	6.9	15	312	7.9	18	312	8.3	24	185	3.1	26	310	5.7	17	305	10.3	16	260	4.2	18	205	1.7	12	356	8.2	20	195	5.1	21	180	4.3	22	293	7.7
2,500.....	16	301	11.7	14	204	5.8	15	306	10.0	16	318	11.5	21	225	2.9	24	308	8.1	15	309	13.2	13	270	5.9	18	224	2.5	11	347	8.1	19	181	4.9	16	215	5.8	18	296	12.5
3,000.....	12	304	13.7	11	221	3.7	14	309	11.9	15	317	14.6	21	238	4.4	22	299	8.9	15	303	14.4	11	290	10.1	17	225	4.6	11	346	10.0	19	191	4.7	15	221	5.3	16	292	13.8
4,000.....	12	305	15.7	13	310	18.2	12	305	15.7	13	310	18.2	12	305	15.7	13	310																						

TABLE 3.—Maximum free-air wind velocities (m. p. s.), for different sections of the United States, based on pilot-balloon observations during February 1941

Section	Surface to 2,500 meters (m. s. l.)					Between 2,500 and 5,000 meters (m. s. l.)					Above 5,000 meters (m. s. l.)				
	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station
Northeast ¹	35.8	WSW	1,810	12	Binghamton, N. Y.	52.8	SSW	4,700	8	Portland, Maine	69.2	WSW	10,190	12	Caribou, Maine.
East-Central ²	44.2	WNW	2,050	17	Louisville, Ky.	68.0	WNW	3,520	18	Norfolk, Va.	84.0	W	9,000	15	Greensboro, N. C.
Southeast ³	37.7	NW	2,320	18	Spartanburg, S. C.	46.2	WNW	4,700	15	Atlanta, Ga.	70.0	WNW	10,150	23	Atlanta, Ga.
North-Central ⁴	40.2	NW	930	14	Bismarck, N. Dak.	46.4	NW	5,000	18	Minneapolis, Minn.	64.4	WNW	5,940	18	Madison, Wis.
Central ⁵	42.7	NW	2,260	17	Moline, Ill.	56.0	WNW	5,000	18	Chicago, Ill.	67.5	WNW	9,730	17	Omaha, Nebr.
South-Central ⁶	42.5	W	2,490	12	Big Spring, Tex.	50.8	WNW	4,310	12	San Antonio, Tex.	82.0	NNW	11,030	11	Houston, Tex.
Northwest ⁷	30.0	S	2,480	5	Medford, Oreg.	33.0	WSW	5,000	26	Spokane, Wash.	59.0	W	18,200	1	Billings, Mont.
West-Central ⁸	47.6	S	2,324	28	Ely, Nev.	55.5	SSW	4,340	28	Ely, Nev.	79.2	NW	9,920	9	Pueblo, Colo.
Southwest ⁹	45.4	W	1,909	12	Roswell, N. Mex.	80.0	WNW	5,000	12	Winslow, Ariz.	91.6	NNW	9,820	9	Albuquerque, N. Mex.

¹ Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, and northern Ohio.

² Delaware, Maryland, Virginia, West Virginia, southern Ohio, Kentucky, eastern Tennessee, and North Carolina.

³ South Carolina, Georgia, Florida, and Alabama.

⁴ Michigan, Wisconsin, Minnesota, North Dakota, and South Dakota.

⁵ Indiana, Illinois, Iowa, Nebraska, Kansas, and Missouri.

⁶ Mississippi, Arkansas, Louisiana, Oklahoma, Texas (except extreme west Texas), and western Tennessee.

⁷ Montana, Idaho, Washington, and Oregon.

⁸ Wyoming, Colorado, Utah, northern Nevada, and northern California.

⁹ Southern California, southern Nevada, Arizona, New Mexico, and extreme west Texas.

WEATHER ON THE NORTH ATLANTIC OCEAN

By H. C. HUNTER

Atmospheric pressure.—The average pressure during February 1941 over those portions of the North Atlantic that are amply covered by reports at hand was everywhere less than normal, though over the northern and eastern Gulf of Mexico the departure was small. Near the coast of the Maritime Provinces and New England the departure was especially large, -7.8 millibars (-0.23 inch). For most parts of the ocean it is indicated that pressure averaged lower during the second than during the first half of the month.

The extremes of pressure in the available vessel reports were 1,034.5 and 960.4 millibars (30.55 and 28.36 inches, respectively). The high mark was noted late on the 3d, near 38° N., $24\frac{1}{2}^{\circ}$ W., on the Portuguese S. S. *San Miguel*. The low mark was recorded on the American liner *Siboney*, about 10 a. m. of the 15th, when the vessel was slightly more than 200 miles west of Lisbon. In the western portion of the North Atlantic the lowest reading was noted by the United States Coast Guard cutter *Pontchartrain*, near 40° N., 58° W., early on the 24th, 970.2 millibars (28.65 inches).

TABLE 1.—Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic Ocean and its shores, February 1941

Station	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Millibars	Millibars	Millibars		Millibars	
Lisbon, Portugal	1,016.2	-3.1	1,029	7	990	15
Horta, Azores	1,016.8	-4.2	1,032	1,3	996	26
Belle Isle, Newfoundland	1,000.1	-6.0	1,019	13, 14	970	19
Halifax, Nova Scotia	1,005.1	-7.8	1,031	13	984	16
Nantucket	1,009.5	-7.8	1,028	13	981	7
Hatteras	1,013.9	-5.7	1,025	24	991	7
Turks Island	1,015.4	-3.2	1,018	1, 19	1,010	12
Key West	1,015.6	-2.7	1,022	10	1,001	9
New Orleans	1,018.0	-1.0	1,027	4	1,004	6

NOTE.—All data based on a. m. observations only, with departures compiled from best available normals related to time of observation, except Hatteras, Key West, Nantucket, and New Orleans, which are 24-hour corrected means.

Cyclones and gales.—Those portions of the North Atlantic which are covered by reports at hand seem to have been about as turbulent, on the whole, as during an average February. The second half was stormier than

the first half, but during the 21st to 23d, as during a similar period, 11th to 13th, the ocean regions from which information has come seem to have been free from notable storms.

An important cyclonic system affected the western part of the ocean during the first week. It lay approximately along the Appalachian crest, extending over nearly the entire width of the United States, on the morning of the 2d, but was not then of much energy, nor did it intensify greatly during the first hours that it was moving eastward over Atlantic waters. By the morning of the 4th, however, when it was less extended, it showed considerable strength round its chief center, about 500 miles east of Nantucket, and the following morning's reports indicated a vigorous storm centered near Newfoundland, where it moved but slightly for 24 hours, then continued its northeastward advance. The Coast Guard cutter *Chelan*, near 40° N., 59° W., on the 4th recorded a wind force of 12 in connection with this storm.

A low that was more severely felt close to the eastern coast of the United States than the one just described was centered over the Carolinas on the morning of the 14th, then moved to a short distance east of Hatteras the next evening; to about 38° N., 67° W., on the morning of the 15th; and to a location not far to southeast of Nova Scotia on the evening of that day. Through the 16th and part of the 17th it was near southwestern Newfoundland, after which it united with a low which had followed it, and remained near the Gulf of St. Lawrence for several days, finally moving on to northeastward on the 23d. No information at hand indicates force-12 winds connected with this storm, but the American liner *Excambion* met a force-11 gale when between Bermuda and New York, near 33° N., 65° W., while two cutters considerably farther to eastward likewise reported winds of force 11.

During the final week of February a storm developed east of the South Atlantic States, showing moderate strength on the 23d when centered between the Carolinas and Bermuda, and on the following morning being remarkably vigorous when located about 600 miles to eastward of Nantucket. Thereafter it continued to move northeastward till lost to observation beyond southern Newfoundland. The cutters *Cayuga* and *Pontchartrain* reported force 12 and the cutter *Bibb* force 11, while under the influence of this low.